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ABSTRACT

The document introduces a college program designed to encourage the initiation and evaluation of strategies to increase student learning through innovative teaching methods. It also contains reports on completed individual projects. The principal activity of the Innovation Incubator at the College of DuPage (Illinois) is to support specific research projects. Other Innovation Incubator sponsored activities have included discussion groups, development projects, and Net Site Bookmarks. Each project starts with an innovative idea proposed by a faculty member. The idea is then investigated and developed into a test project. Projects are implemented in some classes, measurements are taken, effects of the idea on learning are determined, and results are communicated throughout the college. Innovation Incubator projects have investigated the effects of various types of computer software, the internet delivery of courses, the student control in evaluations and course requirements, and the applications of course material to research or nonacademic pursuits. Instructors found higher attendance rates and student satisfaction in innovation groups. A study investigating the effects of Internet delivery of the CIS 100 curriculum, for example, provided evidence that the method of course delivery chosen by the student does not negatively affect student performance. However, the Internet-based students (innovation group) tended to contact the instructor more often than the paper-based control group. (JA)

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College of DuPage

Innovation Incubator
Annual Report
May 2000

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Executive Summary

The Innovation Incubator is designed to encourage the initiation and evaluation of strategies to increase student learning through innovative teaching methods at College of DuPage. Innovation Incubator sponsored activities have included research projects, discussion groups, development projects, group communication sessions, Net Site Bookmarks, and a web site linked to the College of DuPage homepage.

Research projects include a review of the relevant literature, the design of a controlled study, gathering of data, and a report of the results. Faculty members have examined the effects of service learning, broadening the scope of a course, various writing methodologies, applications or problem solving, alternative forms of evaluation, and the use of computer software, the internet, and other technologies. In addition to the stated hypotheses, there were characteristics that were discussed by researchers but may not have been statistically significant or an original part of the study's design. Eight general areas that were addressed by various reseärchers include more effective interactions with instructors, greater levels of student motivation, useful transferable skills for the workplace, increased student flexibility, increased student satisfaction, improved critical thinking skills, positive effects on participating faculty, and the subjective experiences of faculty.

Innovation Incubator

The Innovation Incubator is designed to encourage the initiation and evaluation of strategies to increase student learning through innovative teaching methods at College of DuPage. The Innovation Incubator has started to build a community of faculty and administrators dedicated to research, development and appraisal of new approaches to teaching and learning. The original goals included soliciting and selecting two research projects during the first year, facilitation of five projects during the second year, and facilitating five projects during the third year. As demonstrated in Figure 1, Innovation Incubator has exceeded these goals annually. There have been over sixty faculty members involved in Innovation Incubator sponsored activities. Thirty- two faculty members have been primary investigators. Of these, two individuals are participating in a second project, and there are three projects involving more than one investigator. Additionally, four faculty members led discussion groups, and a fifth faculty member has completed a development project. Two projects have been terminated. Figure 2 shows the numbers of faculty involved in Innovation Incubator activities. Innovation Incubator supported twenty-four faculty members in the development of twenty-six Net Site Bookmarks that are available for use through the library web site. The participating faculty members represent various divisions of the college. Figures 3,4, and 5 present the breakdown by division of participants in research projects (Figure 3), Net Site Bookmark projects (Figure 4), and total projects (Figure 5). The fifteen Business and Services faculty consisted of eleven researchers and four Net Site

Bookmark projects. Twenty-five Liberal Arts faculty have participated. Eighteen have been involved with research projects and the division produced seven Net Site Bookmark projects. One Library faculty member is a principal investigator, while two members of the Library faculty produced four Net Site Bookmarks. The Natural Sciences division contributed eight research projects and three Net Site Bookmarks. Ten members of the Occupational and Vocational Education division also participated in Innovation Incubator activities. Eight faculty members produced Net Site Bookmark projects, and two were investigators in research projects. Fifteen faculty members are currently investigating and implementing projects. The studies that are in progress address either technology issues or scheduling issues.

The principal activity of the Innovation Incubator is to support specific research projects. Each project starts with an innovative idea proposed by a faculty member. The idea is then investigated and developed into a test project. Projects are implemented in some classes, measurements are taken, effects of the idea on learning are determined, and results are communicated throughout the college. Ongoing "jamming" sessions with all principal investigators support the development and execution of these projects. Since the establishment of the Innovation Incubator in Fall Quarter 1996, more than twenty-five faculty research projects have been initiated. There are currently ten projects involving fifteen faculty members being investigated and implemented. Other activities supported by the Innovation Incubator include the sponsorship of discussion leaders, development projects, and the Net Site Bookmark Development projects. Information about Innovation Incubator is maintained on our web site at: http://www.cod.edu/dept/Inn_Inc/, which can be reached through the College of DuPage homepage, Academics, Faculty, and Innovation Incubator. The Innovation Incubator currently consists of co-coordinators Mike Drafke and Jeannie Folk as well as research consultant Marianne Hunnicutt.

Goals

The Innovation Incubator was designed to encourage the initiation, testing, evaluation and development of new strategies to increase learning through innovative teaching strategies at College of DuPage. The original proposal hoped to facilitate at least ten pilot projects, through the entire cycle by the end of the third year. To date, Innovation Incubator has facilitated twenty-four projects with another ten in progress. In addition, it has developed Netscape Bookmarks in multiple discipline areas for campus-wide use.

In addition to responding to proposed projects, finalizing current project documentation, and updating the web site, we would like to initiate an Innovation Generator with appropriate staff. The purpose of this project would be to disseminate innovation throughout College of DuPage. It would facilitate one of the original purposes of Innovation Incubator described in the original MIF proposal, Connections: College of DuPage Teaching and Learning Incubator: "To encourage and systematize the expanded adoption and adaptation of instructional processes and approaches which prove particularly successful in helping our students and faculty learn and succeed in today's and tomorrow's world." This project would involve analyzing the completed studies, identifying decision-makers that should receive these results, and conducting forums for new and experienced faculty. These forums would disseminate

innovation incubator information, collect new innovative ideas, and discuss teaching methodologies. In order to make better use of the data that has been compiled, we would like to generate a compendium of teaching methods, including how and when to use each method, for institution-wide use. The results from Innovation Incubator projects would be discussed in relationship to these methodologies. This information would then be sent to the Innovation Generator for dissemination.

Jamming Sessions

Group sessions have been held to allow investigators an opportunity to communicate with others who are working on Innovation Incubator projects. The early sessions focused on sharing project ideas and various difficulties investigators were having with their respective projects. Issues that were discussed included hypotheses, design issues, dependent variables, demographic data, and consent forms. The English faculty was concerned about social science research expectations being applied to humanities disciplines. After data had been collected on the original studies, there was discussion of organizing the data for the student aide to input. There was also discussion of new studies being proposed. As the results of specific innovations became available, faculty presented these results to other faculty members. On January 27, 1999, an open house was held to share the available results of Innovation Incubator projects. Additionally, a forum was provided to answer questions from potential investigators. Approximately fifty individuals attended this event. During Spring Quarter, 1999, the jamming sessions were conducted based on project groups. These groups included members of the online faculty, a technology group, an English composition group, and a group investigating the effect of different types of class schedules on student learning.

Individual Projects

The project process includes several steps. Initially an interested faculty member discusses his or her idea with the Innovation Incubator staff. This initial discussion addresses the idea, its innovativeness, and types of resources needed to complete the study. Once a project idea has been approved, the Investigation portion begins. This includes a report of a literature review from academic journals, web sites, and list servers that identifies experiences with similar types of interventions. The primary investigator develops a hypothesis and predicts outcomes. The results are reported in an Investigation Document. During the following quarter, the principal investigator designs his or her specific research. This involves describing the hypothesis, a rationale for the study, the population, the independent variables, the dependent variable or measurement, and the specific procedures that will be used to gather the data. This information is formally reported to the Innovation Incubator staff in an Inception Document. The third quarter is used to actually gather the data. During this time two classes are taught. Only one, the innovation class, receives the investigator's intervention. The other, the control class, is taught in the same manner but does not receive the investigator's intervention. Both classes are given an identical dependent variable or measurement of learning. The results of the dependent variable are examined and reported on during the final quarter of the study. The researcher compiles statistics on student learning and student attitudes and writes a report on the project. This report includes

background information, the project's implementation, the results, and the effects of the innovation.

Discussion Leaders

Innovation Incubator discussion leaders research innovative teaching or learning topics and disseminate what they learn through discussions. Our goal is to involve as many faculty members as possible in the process of innovation to improve learning. Using discussion leaders, we hope to inspire smaller innovations and improvements to teaching and learning among a larger number of faculty. The discussion leader first investigates a new or innovative method to improve teaching or learning in a specific area and summarizes the findings. The discussion leader follows this investigation with a minimum of three discussion sessions with faculty in the specified area.

Development Project

Innovation Incubator development projects are designed to investigate the effect on learning of a particular in-class experience, homework assignment, or group project. These investigations involve smaller innovative ideas in order to explore different approaches.

Netsite Bookmark Development

Under the auspices of Innovation Incubator Net Site Bookmark Development, twenty-four faculty members created Netscape bookmark files containing the names and addresses of Internet sites supportive of teaching and learning efforts relating to our academic programs. College of DuPage librarians are incorporating the bookmarks on the Library Web Site that will be linked from the Innovation Incubator Web Site. These faculty bookmarks are a part of the library's Subject Research Guides and can be found at: http://www.cod.edu/library/research/research.htm

Summary of Results and Future Implications

Innovation Incubator projects have investigated the effects of various types of computer software, internet delivery of courses, increased student control in evaluations and course requirements, and applications of course material to research or nonacademic applications. Perhaps the most interesting results from the studies are those characteristics that were discussed by researchers but may not have been statistically significant or an original part of the study's design. These characteristics include more effective interactions with instructors, greater levels of student motivation, useful transferable skills for the

workplace, increased student flexibility, increased student satisfaction, improved critical thinking skills, positive effects on participating faculty, and the subjective experiences of faculty.

Instructors found students in innovation groups more willing to interact with other students, contact the instructor, and re-enroll in sequential classes with the same instructor. There were also higher attendance rates in innovation groups along with increased student satisfaction. Increased levels of critical thinking were reflected in more elaborate writing, thoughtful responses to conceptual questions, and more in depth project completion. Students appear to appreciate greater degrees of flexibility that allow them to contact faculty and use technology at times convenient for them. Several workplace skills were observed to me more effectively learned in innovation groups. The use of software likely to be used in the workplace and creation of specific documents similar to those used in the workplace were considered by faculty to be particularly useful benefits to the innovation groups.

Many investigators commented on their continued belief that the innovation had an effect even when not statistically significant. Typical responses included suggestions of potential modifications, development of new course material, and a sense of reinvigoration among investigators.

In general, no differences between innovation and control groups suggest innovations are doing no measurable harm. Repeatedly, the studies showed no statistical differences on the measurable variable. However, faculty generally found more positive attitudes in the innovation groups. There may be some long-term effects that are not being measured. Many of the observations made by faculty related to learning skills that did not effect grades in the current class but might improve functioning in future classes or work situations. The innovation group in a study involving service learning showed improvement on more than half the items on a Personal Report of Communication Apprehension (PRCA) instrument. The control group in this study improved on less than one quarter of the items. This measurement may lend itself to observable differences more effectively than measurements of grades. Grades reflect many components of instruction and learning. The faculty involved in these studies volunteer to participate and therefore are a self-selected, motivated group of instructors. In comparison with less motivated instructors, these instructors may facilitate better learning outcomes in the control groups as well as the innovation groups. Providing information about successful methods of instruction to a larger group of faculty might serve to invigorate faculty who have begun to stagnate and inform less experienced faculty. Some faculty may be unaware of the large number of possible techniques available to successfully instruct and therefore benefit from exposure to these innovative techniques.

Business and Services Projects

Completed Individual Projects

The Effects of using General Ledger Software in Accounting 151-152

Folk, Jeannie

The study investigated whether or not students using general ledger software in Accounting 151 perform as well as students who do not (as measured by differences between similar portions of a pre-test and posttest as well as posttest content summary scores). It also investigated whether or not students will spend more time completing selected problems and will display more positive attitudes about their work.

A pretest was administered and demographic data collected from each group. Four assignments comprised of end-of-the-chapter textbook problems were completed by the innovation group using a software package while the control group completed the problems manually. Self-reports of time spent completing each assignment were turned in to the instructor. At the end of the quarter, a posttest (repeat of pretest and more) and survey of attitudes toward course was administered to each group.

There were no statistical differences between groups on pretest/posttest overall scores. However, on the portion of the posttest that covered the terminology of the accounting cycle the innovation (software) students had a significantly higher mean score. The innovation group spent significantly less time completing selected problems than the control group. Students in the innovation group had significantly stronger feelings that completing the assignments was interesting and enjoyable while students the control group felt significantly more strongly that completing the selected problems was a difficult task. Although they performed similarly to the control group, students in the innovation group felt significantly less prepared for the posttest following problem completion. Students in the control group felt more strongly that they would have preferred using the software.

Although the use of general ledger software (GLS) means the computer performs much of the computational and summative effort of the accounting cycle, student learning seems not to be adversely affected by this. At the same time, this software reduces the time students spend completing problems and increases their enjoyment of their work. Although the overall "presentation" of each of the assignments submitted was not considered in the grading criteria, the assignments submitted by students in the innovation group were more professional in appearance. The researcher observed that students in the innovation group appeared to take more pride in their work and be more motivated to identify and correct errors. Since a learning methodology that includes GLS use is at least as effective as one that requires only manual completion of assigned problems, and since it is also the much more efficient of the two, students in introductory financial accounting courses should use GLS to complete selected end-of-chapter problems.

The results of the Innovation Incubator Project have been presented to the Accounting Advisory Board and an Accounting Faculty meeting as well as incorporating the results in a training session for part time faculty members. Additionally, an article on the research was published.

The Effects of Internet Delivery of CIS 100 Curriculum

Grabow, Wanda

The study investigated whether or not student course delivery method affects student learning or the total amount of instructor time spent per student. Students either received information and instruction through mailed printed literature or over the Internet.

A written pretest was mailed to students in both groups before the beginning of the quarter to assess initial knowledge of computers. All students had equal access to the instructor through their method of choice (meeting during lab hours in the CIL, voice mail, e-mail, and office hours) and identical testing.

There were no significant differences between groups for any of the five tests or the pretest. In comparison to the group receiving mailed materials (14 contacts), the Internet group (129 contacts) preferred to communicate with the instructor through e-mail contacts. Voice mail communications were 27 contacts for the CIL group and 13 for the Internet group, while telephone calls were 40 for the CIL group and 15 for the Internet group.

This study provides evidence that the method of course delivery chosen by the student does not negatively affect student performance. However, it suggests that instructor workload is affected by method of delivery. Although statistical testing did not render significant results, instructor contacts seemed remarkably different in type and number. The paper-based students (control group) tended to contact the instructor less than their Internet counterparts (innovation group). E-mail was the contact of choice for the Internet students, while telephone calls and voice mail were more popular with the paper-based students. Students may feel more comfortable with the more anonymous contact provided by e-mail and using the Internet may lend itself more readily to using e-mail. At the same time, e-mail may beget more e-mail; when talking over the telephone, misconceptions and miscommunications can be handled immediately, while incomplete or poorly communicated e-mail requires another e-mail.

The results of the Innovation Incubator Project were discussed at CIS faculty meetings and with colleagues from other institutions.

The Effects of Windows 95 Keyboarding Curriculum

Kapper, Ron

The study investigated the effects of students completing an introductory class in computer keyboarding using generic Windows-based software, when compared with students completing the same class using Microsoft Word word processing software. Learning was measured based on the average of the students' three best 3-minute timings and accuracy based on the average number of errors of their three best 3-minute timings.

A student survey was administered to both classes. Students in the innovation class used new Windows-based software and a new textbook, while the traditional Microsoft Word word processing software with accompanying textbook was used in the control group. There were no differences found between groups in keyboarding performance based on speed or accuracy.

While this study demonstrates that keyboarding performance is gained just as effectively with a Windows-based software, there are advantages to using Windows-based software over a Word word processing software for the teaching of keyboarding skills. It will not be continuously outdated and additional hardware to run it will not be needed in the near future. This software will also be available in the near future for students to load on their own computers, so practicing outside of class will not have to depend on getting to a school lab. The investigator would like to repeat this study, since there were several factors that may have resulted in the Windows-based software group (innovation group) performing less well than they might have. For example, the new Windows-based software had some flaws in it that required rebooting disruptions during class, the new software was not available in the lab until the middle of the quarter for out-of-class practice, and the innovation class met for fewer hours than the control class.

The results of the Innovation Incubator Project were presented to local, state, regional, and national organizations. Results were also shared with Office Technology instructors, keyboarding publishers, and a list-serve.

The Effects of Internet Delivery of CIS 151

Koerfer, Joyce

The study investigated student performance on the final design project in Introduction to Local Networks class. The innovation class was a self-directed online class. The control class was taught in a traditional manner. A demographic survey and twenty-five-question pretest were administered to both groups at the beginning of the quarter. The same twenty-five-question test was administered as a post test at the end of the quarter. The same final project was required of both groups. The classroom section was delivered and managed in the traditional manner. The online section was managed solely via e-mail. The instructor recorded the time spent, date, and manner of activity for both classes.

There was no difference between groups in the mean scores on the final project. The instructor did spend considerably more time grading and contacting students in the on-line course. Many students who enrolled in the course did not understand that the course required a high degree of Internet proficiency. This may explain the high number of withdrawals in the on-line section. It would be useful to help students assess their Internet skill levels before they enroll. A pretest on Internet searching and tutorial would be helpful. Instructors should be aware that students tend to submit the bulk of their work on weekends and Mondays. Additionally, on-line instructors should carefully plan the procedures to be used regarding assignment format.

The Effects of Real-life Word Application in OFTI 190

Maas, Peggy

The study investigated students' grades at the completion of a class in Microsoft Word utilizing "real-world" application documents on an end-of-quarter project compared to students' grades in the traditional Microsoft Word Class.

Demographic and pretest surveys were administered. Although the same textbook was used in both classes, the emphasis was different. The innovation class included "real world" applications (previously gathered by the instructor from various companies) for classroom exercise and discussion focusing on the fit between Microsoft Word features and the target audience, purpose of communication, etc., while the control group received traditional instruction merely in software concepts. Both groups completed the same "real world" final project (including self-reported time spent on task) in addition to the same final theory test. A posttest survey was administered to both classes. An Office Technology Information advisory committee member graded final projects as well. This grade did not affect the students' course grade.

There were no significant differences between groups on the pretest, posttest surveys, self-reported time spent on the task, theory final, or final project as graded by the instructor or advisory committee member. There was a significant difference between instructor's and advisory committee member's grades on the "real world" final project, with the latter grading significantly lower than the former.

The innovation group did not provide better results than the control group, although they were no worse. Because the numbers in the sample were small, it would be worthwhile to continue the study with future beginning Microsoft Word courses. In addition, the benefits to students in the innovation group may become evident when students are creating documents on the job or for personal use. The critical thinking aspects experienced by the innovation group may be helpful in job performance.

The results of the Innovation Incubator Project were presented to the Illinois Business Education Association and the Community College Conference of

Office Technology Instructors at EIU. As well as sharing the results with faculty at College of DuPage, the instructor's coursework has been adapted to reflect the concepts that were studied in the Innovation Incubator project.

The Effects of using Accounting Software in Accounting 111

Peters, Judy

The study investigated the effects on learning Accounting 111 in students using Peachtree Accounting Software with students using manual accounting only.

A written pretest was administered during the first week of the quarter to all students in both groups. The innovation group solved homework exercises (single concept) manually and homework problems (multiple concept) using Peachtree Accounting software. The control group solved both homework exercises and homework problems manually. A written posttest was administered to all students in both groups following completion of the basic accounting cycle. The pretest and posttest consisted of the same fifty multiple-choice questions. There were no statistical differences between groups on either the pretest or the posttest.

An Accounting 111 learning methodology utilizing Peachtree Accounting software appears to be as effective as a learning methodology utilizing manual accounting only. Students using Peachtree Accounting software for homework problems appear to learn as much accounting as well as learning an additional job skill. Therefore, students in Accounting 111 should use Peachtree Accounting software to complete homework problems.

The results have been shared with accounting faculty at COD. Based on the results of this study, Accounting 111 will be taught in the CIL using Peachtree beginning Spring 2000. Additionally, regular Accounting 111 classes will be offered using Peachtree during Fall 200. A summary of the project was published in the Teachers of Accounting at Two-Year Colleges newsletter.

Ongoing Projects:

1) The Effects of using PowerPoint and the Internet

Goodman, Phyllis

2) The Effects of using PowerPoint in Fashion 231

Scalise, Sharon

Discussion Leaders:

The Nature and Implications of Assessment and Testing in Online Courses

Folk, Jeannie

Three discussions were conducted with online faculty and interested administrators about the nature and implications of assessment and testing in online courses. The primary focus of the discussions was on issues relating to testing (security issues, methodologies, etc.). Information about the assessment and testing procedures currently used for our online courses was gathered. Generally, the consensus was that assessment and testing decisions need to rest with the individual online faculty members. However, the group also realized that certain concerns (e.g., security issues and the mechanics of administering such tests) are impacted by the course management system in use. Subsequently, we learned that the college plans to implement a course management system called Intrakal. Online faculty members will be involved in the implementation of the system. Follow-up, in terms of security and administration issues, will take place at that time.

Innovation in Adult Business Education

Payne, Nancy

Three discussion forums were held relating to Adult Business Education. The results of the literature review were presented at a department meeting. The focus of the discussion was how the department could become more innovative. It was also noted that many of the current projects were quite innovative. A noteworthy example is the business simulation. The second forum was presented to part-time faculty at our part-time full-time dinner. Discussion was light. The focus was presenting ideas to fuel innovation in the classroom by our part-time faculty. Additionally, a discussion group was posted on the web board. Both part-time and full-time faulty were encouraged to post questions, thoughts, comments, etc. It was hoped that something innovative would come out of our discussions. There was light activity on the web board. Most interested parties discussed issues with Nancy Payne personally.

Corporate Training in the Use of Computer Software

Stanko, Nancy

The purpose of this project was to make on-site visits to five companies/training facilities to determine what types of training they were offering their employees to keep current with computer software. The results would demonstrate specific examples of what we could do within our courses and curriculum to better prepare our students as they work in our business community. Representatives from Neuqua Valley High School, McDonald's Corporation, Lucent Technologies, Mirabella & Kincaid, and Boise Cascade Office Products Corporation were asked the following questions during the on-site visits:

How are computers used?

What specific software programs are used?

What were the tasks employees were required to perform on the computer?

What percentage of time was spent on specific tasks?

Who conducted the training?

How was training conducted?

What resource materials were used?

Where were they getting their training material?

What was the training environment?

Do they have an action plan to keep employees current?

The results were discussed with departmental full-time faculty, part-time faculty, and the Office and Technology Information Advisory Committee. One-on-one discussions were also held with specific individuals. Some of the major points included in the discussions were:

1. Textbooks we use in class are a "screen capture" of one moment in time. We must supplement our texts with examples of what our businesses are doing in order that our students are prepared for the current working environment.
2. What we "think" is an important concept may not be relevant with some companies.
3. Our students must be flexible with tasks given to them. Companies change so quick that our students must be prepared to accept new challenges often.
4. The leader is a facilitator, and may not "know it all". Employees share their knowledge during training sessions and many times the leader must adapt and allow employees to explain procedures. Coaching and mentoring is essential. Many of the sessions offered were felt to be "crash" courses. More training was thought to be needed.

Netsite Bookmarks

Real Estate and Law

Carmody, Bill

Financial Accounting

Horton, Kathy

Income Taxes (accounting)

Kovach, John

Criminal Justice

Murdock, Robert

Liberal Arts Projects

Completed Individual Projects

The Effects of Service Learning on Speech 100

Erickson, Susan

The study explored the effects of service learning on Speech 100 students' learning of interpersonal communication skills. The researcher investigated the role of combining classroom learning with learning gained through service experiences working with community-based organizations as exhibited by self-reported changes in a communication apprehension questionnaire and by final grades.

A Personal Report of Communication Apprehension (PRCA) was administered to both groups at the beginning of the course and repeated at the end of the quarter. Both groups were given the same reading assignments, midterm and final examinations. The innovation (service learning) group spent 8 Friday class periods at service agencies (e.g., homeless shelter, Habitat for Humanity, etc.) that the instructor arranged while the control group spent Fridays working on group library projects.

Paired t-tests comparing pre- and post- course scores on the PRCA items showed significant individual-level change in the innovation (service learning) class in 13 of 24 items whereas 5 of the 24 items exhibited significant change in the control class. Additionally, attendance rates were higher for the service learning group (83%) than the control group (76%).

Combining service learning into a traditional classroom curriculum requires a significant amount of time and planning, especially the first year. However, the investment is one worth making because as this study has shown, classroom instruction and service within the community enhance learning.

The Effects of Internet Delivery of Economics 201

Frateschi, Lawerence J.

The study investigated the effects of Internet delivery of Economics 201: Introduction to Macroeconomics curriculum on students' learning and retention.

A macroeconomics course was taught either online (innovation group) or in a traditional classroom (control group). The same professor, using the same syllabus, same textbook, same course materials, same assignments, same Internet activities, and same course examinations taught both groups. Both groups were administered the Test of Understanding College Economics III (TUCE) as a pretest prior to beginning course work and as a posttest upon completion of the course. Students in the innovation group had access to all materials using the World Wide Web and could cover material in a self-directed fashion. However, pretest, course exams, and posttest had to be completed in the College's Testing and Assessment Center. Classroom students were moved through the material as one group, taking pretest, course exams, and posttest at times scheduled by the professor. Both the innovation and control groups demonstrated a statistically significant increase from pretest to posttest with no differences found on the TUCE posttest.

This study supports the notion that student learning and self-directed learning using the World Wide Web does not adversely effect retention of introductory macroeconomics. The use of emerging technologies to increase availability of college transfer courses to those otherwise unable or unwilling to attend the traditional classroom can be used with some confidence. The course professor must be prepared to develop materials that are clear and concise since the self-directed student will expect and demand that. The time required for grading work, for individual discussion and review, and for other support activities for the self-directed internet students will increase the total time commitment and workload over that experienced in the traditional classroom course.

The Effects of the Use of Microcase in Political Science 101

Goergen, Chris

The study investigated the effectiveness of teaching American Government with MicroCase Software. The MicroCase Software and workbook contains sixteen computer-based assignments with seven data sets and the Explorit analysis program.

A two group, pre-test/post-test design was used. One class (control group) was taught using lecturing, presentation of information via overheads, and student presentations. The other class (innovation group) explored the same topics using the MicroCase workbook and software. Both sections were pre-tested for general knowledge about American Politics. The pre-test did not reveal any significant difference between the two groups (p=. 77). An effort was made to keep as many aspects of the two courses as similar as possible. While the innovation group spent about fifty minutes per week in a computer classroom working through the topics in the workbook, the control group used about the same time to listen to student presentations and discuss the same topics in a traditional classroom setting.

The performances on the midterm and final exams were evaluated to determine differences in learning. There were no statistically significant differences found between the two groups. Since students who used the Microcase Software mapped electoral and popular votes for presidential elections and analyzed national surveys, one could expect that they would learn more about statistical methods and become more proficient in reading tables and graphs. Somewhat surprisingly, there was no difference found between groups in students' ability to read and interpret data. The only significant difference occurred in regard to students' ability to provide pro-con arguments on controversial issues. Students in the innovation group were significantly less likely to answer these questions correctly than students in the traditional classroom group. Based on results of an attitude survey, students like both MicroCase and the discussion format. Most students in the innovation group using computer software agreed that "doing the computer analysis helped me to better understand the issues discussed in class." In most ways, the present study confirms what others have found before: Using information technology in the classroom does not by itself improve the performance of students.

The Effects of Multiple Types of Evaluation in Psychology 100

Hunnicutt, Marianne

The study compared the effects on students' learning in Psychology 100: Introductory Psychology of multiple types of evaluations in comparison to traditional student evaluations. Numerical scores on an objective (multiple-choice) final exam measured learning. The investigation included examination of the scores on sub-portions of the final exam associated with each type of evaluation. Responses on a survey administered late in the quarter reflected levels of student satisfaction with the course.

A demographic and opinion survey was administered on the first day of the quarter to both classes. Both classes used the same textbook and took the same multiple-choice exam on unit I (this exam serving experimentally as a pretest). Following the first unit, 70% of innovation class unit grades were based on three different types of learning evaluations (learning projects, critical thinking/problem solving assignments and group learning project), along with 30% multiple-choice testing. In contrast, the control group unit grades were based on 70% multiple-choice testing along with 30% short answer questions. The opinion survey was readministered to both groups during the last week of the quarter. A departmentally developed multiple-choice comprehensive final exam was administered to both classes.

There was no significant difference on the final exam between the overall mean scores of students in the control and experimental groups. There were also no significant differences between groups on any of the sub-portions of the exam that reflected differing types of evaluation during the quarter. The innovation group held significantly more positive attitudes at the end of the quarter about engaging in activities in class and working with groups than they had at the beginning. There was no change in attitude in the control group on these items.

While there are increasing numbers of educators calling for alternative methods of evaluation to measure more complex, higher-order thinking abilities, there is a lack of research demonstrating the effects of various types of evaluation. The present study did not demonstrate superior performance on a traditional multiple-choice exam following application of non-traditional evaluations in the innovation group. However, neither did it demonstrate poorer performance on the final for this group. One of the goals of advocates of authentic assessment is to demonstrate the ability of the different types of assessment to require high standards. The results of the present study suggest that faculty are not depriving their students of academic rigor when they provide a diverse set of student evaluations. In fact, there was a significant difference between groups on the portion of the final comprehensive exam that was originally evaluated with the same multiple-choice exam in both groups, with the innovation group earning higher scores. The best explanation for this unexpected result is that the students' understanding of the research methodology material was enhanced when they were asked to design an experiment in one of their problem solving assignments. The significant attitudinal differences found between groups suggest a benefit in using multiple forms of evaluation.

The results of the Innovation Incubator Project were presented at the Midwest Institute of Teachers of Psychology held at College of DuPage.

The Effects of Student Control of Evaluation in Studio Art

Kamal, Kathy

The study investigated whether or not broadening the scope of jewelry making to include discussion of art and ornament would have a positive impact on student performance. The impact on student performance was measured by self-reported interest in the arts and continuing development of personal

creativity, as well as instructor-evaluated development of skills in metalwork.

A pretest was administered asking students to provide some demographic information, rate themselves as artists, rate their general knowledge of art, and discuss such things as what it means to be an artist and what place jewelry has in culture. Each class wrote brief essays rated by the instructor as interesting, simple, confused, or not completed. The control and innovation classes were conducted similarly, except that the Hyper Art class (innovation group) was shown videos at the end of each weekly 3.5-hour class about current artists at work. Following the videos, the students wrote in their sketchbooks for discussion at the next class meeting. The student sketchbooks were collected twice during the quarter. A posttest that was identical to the pretest was administered at the end of the quarter.

There was only a slightly greater improvement in skills for the Hyper Art (innovation) class as evaluated by ongoing teacher assessment. The student rating of knowledge of art was statistically higher for the innovation group than the control group on the pretest, but there were no differences between groups on the posttest. However, when asked to ponder the conceptual side of art, students in the innovation group showed a significant difference between their pre-test and posttest scores, reflecting more thoughtful responses. The control group showed no change from pre-test to posttest scores. Both the innovation and the control groups demonstrated significantly improved responses from pre-test to posttest regarding the question describing an artist.

Students in the innovation group exhibited an increase in conceptual thinking about art that was not found in the control group. Additionally, the instructor clarified her objectives and their implementation. The instructor is developing new materials to demonstrate to students that learning artistic techniques is not sufficient in a studio art class. Learning about the artistic process throughout time and culture must also be part of such a class.

The Effects of English 101 Students' Cultivation of Self-Awareness on their Public Writing

Kumamoto, Chikako D.

The study investigated the effects on learning in students in Freshman Composition. Students who wrote from multiple-identity-based thinking involving conscious cultivation of self-awareness of one's own multiple public identities as connected thinking were compared with students who wrote in traditional rhetorical modes. Learning was demonstrated by grades on five required essays. Additionally, essays were examined for complexity, maturity, and sense of self-discovery.

Sentence and reading placement scores were obtained on all students for pre-test purposes. Five essays were assigned. The innovation group assignments emphasized participant, reporter, teacher, critic, and persuader frameworks. The control group assignments emphasized narrative, illustration,

comparison, synthesis, and argument frameworks. Written comments about the class were collected on the last day for both groups.

There were no significant differences between groups on the two pre-test scores or on the average grade obtained from the five required essays. Based on written comments on the last day of class, some of the students in the innovation group viewed certain identities/roles more comfortable to assume than others. These responses were interpreted as a sign of epistemological, even dialogic awareness, supporting the hypothesis that using multiple-identity-based thinking for writing assignments would lend itself to a greater sense of self, subject and audience.

There was a sense of promise using the multiple-identity-based thinking approach to writing, although there was no significant difference exhibited in performance as measured by grades. It was intriguing to see how young students in the innovation group began to perceive, in assuming five different writing roles, the notion of the self or identity as something inconstant, shifting, and obscure. In their preference for certain roles to play, they seemed to become aware that the parts they chose to play were not impersonations but ideals. The roles were not so much the way they wanted others to see them as the way they wanted to see themselves.

The Effects of a Student-Developed Classroom Publication in English 101

McGrath, David

The study investigated the effects on learning of English 101 students who write for publication in an in-house magazine of representative essays distributed to the Board of Trustees, faculty, staff, students and members of the community in addition to writing for college credit and skill improvement. Learning was measured by grades on four writing assignments.

A written diagnostic essay was administered the first week of the term, along with a collection of demographic data. Four editorial boards in each class reviewed each of four assignments completed by their members, with the innovation group additionally voting on the best essay for publication.

The innovation and control classes were statistically similar on the initial diagnostic test and demographic variables. No difference between groups was found on any of the four assignments.

Students in the innovation (publication) group seemed to demonstrate greater originality in writing, although control group students earned comparable grades with equal mastery of writing skills. The innovation group wrote more text, both in terms of longer essays and more revisions. The innovation group seemed to exhibit greater involvement in class in terms of more social activity among groups, increased energy on task, more personal revelations in autobiographical assignments, more approaches to the instructor, and more re-enrollments in instructor's next composition class.

The Effects of Writing from Text vs. Experiences in English 102 or 103

Montgomery-Fate, Tom

The study explored the effects of writing from text with writing from non-print sources. The effects were measured in terms of grades and student investment in writing in English 102.

English 101 grammar and reading test scores and demographic data were obtained to determine initial equivalence of the groups. Four writing assignments were completed with non-print vs. print source prompts while a fifth essay was assigned with comparable text-based prompt for both groups. A student investment survey was administered after assignments #1 and #4.

No statistical differences were found between groups in pretest scores; however, the control group was statistically older. The mean grade for the five assignments was statistically higher in the control group than the innovation group. There was no statistical difference between groups on assignment #5 or on the attitudinal surveys.

While non-print prompts may be more inspirational for writing and appeal to a broader range of learning styles (the innovation class did exhibit more lively discussions of topics than the control class), such prompts were discovered to result in more difficult assignments. This explains the statistically higher mean grade for the five assignments for the control group. It is important to note, however, that the fourth assignment, which involved a non-textual prompt for the innovation group, reflected no statistical difference between groups, suggesting that the innovation class was beginning to master the difficulties involved in their more inspirational work. Additionally, the two groups wrote comparably on their final essay, which involved a text prompt for both of them.

The Effects of Various Ways Faculty Complete their CIL Assignments

Slocum, Pat

The study investigated the effects on students and faculty of various ways in which faculty can complete their C.I.L. assignments. In the innovation group, a decrease in assigned seat time of faculty in a distance education format course was compensated for by increased hours of access through electronic and other means. Effects were measured by number of faculty-student contacts, student attitudes about timeliness of responses and faculty availability, and students' final grades.

Faculty (full-time and part-time) from the Center for Independent Learning served as their own controls by maintaining seat time during Fall quarter and

replacing either 50 percent or 100 percent of their seat time with other means of access during Winter quarter. Faculty was asked to keep logs estimating weekly contact with students through various mediums during both quarters. Surveys were sent to students at the end of both quarters, and final grades for all students obtained at the end of the quarter.

There was no significant difference in the distribution of final grades, the mean number of contacts, or faculty response time between the Fall and Winter groups. However, a significant difference was found in the level of perceived faculty availability between Fall and Winter groups, with the Winter students reporting a greater sense of faculty availability. A significant difference was found in the mean level of student satisfaction with faculty response time between the Fall and Winter groups, with the Winter students reporting greater satisfaction.

The findings in this study would indicate a continuation of the practice of allowing faculty decreased physical presence in the CIL in return for increased availability during alternate hours including office hours, and through a variety of means, including electronic means of contact. Maintaining the number of contacts on a regular and timely basis would need to continue and would need to be monitored to ensure the continuance of the high levels of satisfaction. The results of the Innovation Incubator Project are being used on the Emerging Technologies Committee at College of DuPage.

The Effects of a Pedagogy of Liberation in English 103

Tipton, Tom

The study investigated whether or not English 103 students' learning of the academic conventions of research writing within the liberal arts will benefit from an application of Paulo Freire's liberatory pedagogy. Student development of greater conviction in their own arguments and acquisition of more intellectual discipline, resulting in superior grades on their written work was measured.

Both groups had identical texts and syllabi, including the submission of three essays with "cover letters." In the Freirian group, to minimize power differentials between teacher and student and encourage students to take control over their own education, grading criteria, attendance policies, late paper policies, etc., were determined by the students.

While there was no significant difference between the groups on their final grades, the Freirian (innovation) group did attain a significantly higher average grade on the third essay, which contributed to 50 percent of the final grade.

This study suggests a paradox. Those students who were allowed greater freedom in their learning processes nevertheless — or therefore — developed a greater facility within the restrictive conventions of academic writing. Moreover, their critical thinking abilities seem to have increased as well. This paradox indicates that a pedagogical style that imposes checks on productivity through

course requirements, policies, and assessment criteria backfires. The best way to encourage students to engage in productive, critical, disciplined thinking is to give them freedom.

The results of the Innovation Incubator Project were presented to at the national convention of the National Council of Teachers of English, the Conference on College Composition and Communication. The EIC database publishers have solicited a manuscript and the results have been and shared with fellow faculty members.

Ongoing Projects:

1) The Effects of having the Same Instructor in English 101, 102, and 103

Allen, Jim, Kumamoto, Chikako, Sykes, Lynn, Tipton, Tom

2) The Effects of Computer-Mediated Discussion in English 101,102, and 103

Geesaman, Jan

3) The Effects of Internet Delivery of English 101

Kies, Dan

4) The Effects of 2 or 3 Day Compared to 5 Day a Week Classes in Sociology

Wunder, Delores

Netsite Bookmarks:

History-U.S. History

Berger, Marianne

History -- Western Civilization

Berger, Marianne

English Composition

Chu, Mike

General

Lanning, Alan

Developmental Psychology, Sociology

Redo, Mario

English – Mass Media

Stablein, Catherine

Greek Mythology

Weshinskey, Gwenna

Library Projects

Ongoing Projects:

1) The Effects of Using Classroom Technology in Library Orientation Sessions

Thomas, Nancy

Netsite Bookmarks

Library Information Science

Cote, Denise

Library Technical Assistance Program

Slusar, Linda

International Business

Wagner, Judy

Small Business

Wagner, Judy

Natural Sciences Projects

Completed Individual Projects

The Effects of using Math Software in Math 131

Alberico, Brenda

The study investigated whether or not precalculus (Math 131) students who take their class in a computer classroom perform as well on basic algebraic manipulations as students taught in a non-computer class, perform better than their counterparts on concepts of precalculus, and perceive the computer as a useful learning tool.

Students were in either a computer classroom (innovation group) or a standard classroom (control group). The same instructor taught both groups in a two-day. Both classes were permitted, but not required, the use of graphics calculators. The two classes were given a pretest, advisory questionnaire, and identical quizzes and tests, including a departmental assessment test. The pretest was incorporated as a posttest in the final exam.

Although overall there were no significant differences between the groups on the final exam, the innovation group performed significantly better on two basic manipulation problems; solving disguised quadratics and absolute value equations. The control group performed significantly better on one problem; evaluating a sum. The other five basic manipulation questions on the final exam showed no differences in performance between the groups. A basic algebraic manipulation was defined as anything students were taught to do using a

computer or graphics calculator. There were significant differences on four concept questions, which were operationally defined as anything that can not be done using a computer and/or graphic calculator. The innovation group performed better when asked to write the equation of a line. The control group performed better on three problems; a word problem, the translation of a graph, and finding an inverse. Based on anecdotal comments from students during class and office hours, students perceived the computer as a useful learning tool. It helped them understand the concepts, and was used to check answers.

The use of computers does not effect overall performance in precalculus classes. Mathematicians and mathematics educators need to determine which manipulations should be done with the aid of a computer and which manipulations students need to know how to do by hand. Students need to learn when it is appropriate to use the computer, and most importantly need to be able to interpret the outcome from the computer. Although the innovation group did not perform better than their counterparts, they also did not perform statistically worse. The use of computers in the teaching of precalculus concepts does not negatively effect the student's ability to learn concepts and may provide additional useful skills.

The Effects of Incorporating an Experimental Project in Biology 103

Petersen, Chris

The study examined the benefits to students' development of an experimental (research) project in Biology 103 compared with completing traditional lab exercises. The study measured students' grasp of analytical skills, knowledge of basic statistics, and scientific writing, as measured by a final assessment test.

The course content for first five weeks of the quarter was similar, including completion of comparable exams 1 and 2. During the last five weeks of the quarter, in place of ecology and environmental science exercises, innovation classes conducted and statistically evaluated, as a group, a study of the impact of different physical factors on the macroinvertebrate populations in 24 sites on the COD campus. Honors students were required to complete a research paper. The innovation class made use of their group-conducted research project, a far more complex and authentic experiment than the typical study conducted by an honors 103 student. The final test at end of the quarter assessed analytical skills, basic knowledge of statistics, and understanding of how to write a scientific paper.

There were no significant differences between innovation and control groups on either exam 1 or exam 2. In the regular classes, students in the innovation group had higher mean scores on all three final assessments, but the only significant difference was for understanding how to write a scientific paper. In the honors classes, students in the innovation group demonstrated significantly higher mean scores on all three areas tested at the end of the quarter.

The most pronounced differences in final assessment testing following initial equivalence between groups as demonstrated in comparable exam 1 and 2 scores, were shown when comparing the honors sections, perhaps due to the typically greater level of student motivation in these classes. While honors students completing traditional research requirements for their course typically produce good reports, they often cannot answer further questions about their work. In contrast, the honors students participating in the innovative class in this study, who undertook an authentically complex research project as a group, were very actively engaged since they needed to be more involved in understanding their project, interpreting their data, and writing their scientific papers. Their

significantly superior performance on all three dimensions of their final exam in comparison to the control honors section is probably the result of this more active engagement with their work.

The results of the Innovation Incubator Project were published in the Journal of College Science Teaching, a refereed journal. As well as sharing results with faculty at College of DuPage, the instructor's coursework has been adapted to reflect the concepts that were studied in the Innovation Incubator project.

The Effects of Using PowerPoint in Physical Education 250

Tait, Gail

The study investigated the effects of PowerPoint as a presentation tool on classroom atmosphere and student learning and attitudes. In the fall of 1999 two Personal Health classes were taught by Instructor, Gail Tait. In one section, power point (Innovation group) was used at the main delivery method, but classroom activities and discussion were facilitated as usual. In the other section (Control group), traditional classroom teaching techniques of lecture, white board, and textbook overhead transparencies were used. Classroom activities and discussion were facilitated as usual. Student learning, student attitudes and classroom atmosphere were assessed by the following methods: a demographic survey, final course grades, a pre and posttest cumulative exam, instructor observation, and a post-course attitude survey.

While the Control and Innovation groups performed equally well on a pre and post-test comprehensive exam, the Innovation group achieved higher final grades than Control group (Control group, 71% = C average vs. Innovation group, 81% = B average). An attitude survey measured motivation to take the course, understanding of course lectures, freedom to ask questions, the value of class discussions, the pace of lecture, use of audiovisuals, the ability to take notes, their enjoyment of course and motivation to make health changes, and whether the instructor made the course interesting. The only differences between groups was one showing that the Innovation group scored significantly higher in one only aspect of course satisfaction: "The Instructor made the course interesting". A post-course survey showed that the majority of students (93%) "liked" the use of PowerPoint as a lecture tool in class, that it made it easier for them to take notes and improved the quality of the lecture. The

post-course survey showed that the majority (73%) of the students in the PowerPoint class agreed or strongly agreed that the use of PowerPoint enhanced understanding of the course material more than traditional use of lecture and use of whiteboard. There were no differences between the Control and Innovation groups in regards to their perceptions regarding the freedom to ask questions or in the value of the classroom discussion and activities. However, based on Instructor observation the PowerPoint class engaged in more discussion that the control group.

The use of PowerPoint in the classroom has varying degrees of influence on learning. It does not affect student performance on objective cumulative content measures, but it appeared to improve course performance based on unit exams and final grades. Students in the Innovation group responded positively to the use of PowerPoint in the classroom, however they did not rate the class more positively than the Control group on other course evaluation questions. The use of PowerPoint did not affect student overall enjoyment of course or instructor compared to the control group, but did seem to make the course more interesting to students and did not negatively impact class atmosphere in regards to classroom discussions and questions.

The use of PowerPoint in the classroom can have a positive influence on student interest and performance. The results of the present study are mixed, but show some promising indicators. Although dependent on instructor style, instructor comfort level and course content, PowerPoint can offer an effective, and organized delivery mode, that may have a moderate impact on student learning and interest, without negatively affecting student attitudes or classroom atmosphere. Further studies are needed.

Ongoing Projects:

1) The Effects of Compressing Chemistry 251, 252, and 253

Dockus, Carolyn A. and Russell, Chris

2) The Effects of Delivering Chemistry 100 in an all PowerPoint Format

Fuller, Dan

3) The Effects of 2-days and 5-days per Week Formats in Math

Long, Dianne and Sullivan, John

Netsite Bookmarks

Math

Albert, Scott

Biology

Fancher, Lynn

Earth Science

Sutherland, Mark

Occupational and Vocational Education Projects

Discussion Leaders

Integration of Service Learning in Human Services Curricula

Richardson, Tom

Four discussions with Human Services full-time faculty concluded that integrating more service learning into their curriculum was the best innovation they could carry out. Ideas about implementing service learning were discussed, and all of this was conveyed to a meeting of part-time faculty. Follow-up actions include developing a volunteer referral system for students; setting up service learning opportunities with Greater DuPage MYM (an organization that works with pregnant teenagers); and setting up contacts with neighborhood resource centers. The discussion leader feels that the project helped initiate a process within the Human Services Program that will have a significant impact on student learning.

Development Project

Impact of Public Display of Objects from Architectural Technology 203

Leary, David

The communicative impact on the College of Du Page community of the public display of objects designed and constructed by Architectural Technology 203 students was investigated. The purpose of the project was to allow the student

designer to observe what interest their projects would elicit placed "in the world." Projects were placed at various public locations at College of DuPage including the prairie, outside the Art Center, and in the parking lot. Students discovered a wide range of reactions to their work. Some passersby did not notice the projects, while others carefully observed the projects. The most extreme reactions included the dismantling of some projects. This range of encounter had a dramatic impact on the students.

Netsite Bookmarks

Nursing

Barkoozia, Linda

Respiratory/Patient Care

Bretl, Ken

Photography

Friedman, Susan

Radiological Technology

Laudicina, Paul

Mechanics and Machine Design

Meyer, Mark

CADD, Drafting and/or Welding

Robin, Thomas

Human Services

Salvatini, Frank

Automotive

Sobie, Robert